

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Industry Webinar

Project 2008-02 Undervoltage Load Shedding

Project 2008-02 UVLS Drafting Team
September 17, 2013

RELIABILITY | ACCOUNTABILITY



- Welcome, introductions, and administrative
- NERC Antitrust Guidelines and Notice of Open Meeting
- Webinar objectives
- The UVLS drafting team
- Project background
- Overview of the revised Standard Authorization Request (SAR)
- Standard development highlights
- Project moving forward

- Introductions
- Two-hour webinar
- Drafting team presentation followed by Q&A session
- Q&A session guidelines:
 - Submit questions via the chat feature.
 - Please reference the slide number when possible.
 - The drafting team will attempt to address each question, but some questions may require further consideration.
 - Chat questions are not a part of the official project record.
- The slides will be posted on the NERC website.

- **NERC Antitrust Guidelines**

- It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

- **Notice of Open Meeting**

- Participants are reminded that this webinar is public. The access number was widely distributed. Speakers on the call should keep in mind that the listening audience may include members of the press and representatives of various governmental authorities, in addition to the expected participation by industry stakeholders.

- Explain the basis and need for the revision of UVLS standards.
- Provide in-depth understanding to support the informal comment period.
- Respond to questions about the information presented.
- Receive and consider stakeholder input and feedback.
- Inform industry about project timeline.

Member	Organization
Greg Vassallo, Chair	Bonneville Power Administration
José Conto	ERCOT
Bill Harm	PJM Interconnection
Sharma Kolluri	Entergy
Charles-Eric Langlois	Hydro-Quebec TransEnergie
Manish Patel	Southern Company Services
Fabio Rodriguez	Duke Energy Florida
Hari Singh	Xcel Energy
Anthony Sleva	Altran
Matthew Tackett	MISO



Project Background

Erika Chanzas, NERC Standards Developer

- **August 14 Blackout Recommendation No. 21** (April 2004):
 - “[NERC should] determine the goals and principles needed to establish an **integrated approach** to relay protection for generators and transmission lines and the use of under-frequency and under-voltage load shedding (UFLS and UVLS) programs.”
- **FERC Order No. 693, Paragraph 1509** (March 2007):
 - “. . . develop a modification to PRC-010-0 through the Reliability Standards development process that requires that an **integrated and coordinated** approach be included in all protection systems on the Bulk-Power System, including generators and transmission lines, generators’ low voltage ride through capabilities, and UFLS and UVLS programs.”

- **Project 2008-02 UVLS SAR** (January 2010):
 - Address the FERC directive and additional referenced reports.
 - Consolidate PRC-010-0 and PRC-022-1.
 - Add specific criteria for UVLS programs and program assessments.
- **SAR comments** (February 2010):
 - Concerns that the SAR's basis is rooted in fault-induced delayed voltage recovery (FIDVR)
 - Questioning the need for continent-wide requirements for local issues
 - Disagreements with the proposal to include Generator Owners (GOs) and Generator Operators (GOPs)

- Work was deferred due to prioritization for the 2011-2013 Reliability Standards Development Plan.
- Current drafting team was formed in May 2013.
- The team addressed the SAR to consider:
 - The FERC directive (Order No. 693, P 1509)
 - SAR comments
 - [SPCS Technical Review of UVLS-Related Standards](#) (December 2010)
 - Recent and present Reliability Standard efforts
 - Current reliability issues associated with UVLS
 - [Results-based requirements](#)

The background features a light blue map of North America overlaid on a photograph of hands drafting documents. One hand holds a blue pen over a document, while another hand holds a stack of papers. The scene is set in a professional office environment.

Revised SAR

UVLS Drafting Team Chair, Greg Vassallo, BPA

- Clearly address the FERC directive; coordination of UVLS with other protection systems is a key reliability issue.
- Clarify that the effort does not seek to require a UVLS program.
- Omit FIDVR as a basis to revise the UVLS standards.
- No longer consider GOs and GOPs as applicable entities.
- Consolidate existing UVLS standards and revise to results-based requirements.
- Consider recent and overlapping standards efforts (TPL-001-2, PRC-006-1, Paragraph 81, and EOP-003-2 five-year review).

- **Industry need** – Clear and comprehensive results-based requirements for the application and **coordination** of UVLS
- **Scope** – Automatic, distributed UVLS programs
- **Purpose** – To establish an integrated, coordinated approach to the design, evaluation, and reliable operation of these programs
- **Proposal** – Consolidate PRC-010-0, PRC-020-1, PRC-021-1 and PRC-022-1 and revise the requirements to create PRC-010-1

- Proposed PRC-010-1 **WILL**:
 - Establish continent-wide requirements applicable to entities responsible for Automatic UVLS Programs.
 - Address these programs after the need has been determined by appropriate planning studies.
- Proposed PRC-010-1 **WILL NOT**:
 - Require a mandatory Automatic UVLS Program.



Highlights of Proposed PRC-010-1

- **Applicability:**
 - Planning Coordinator and Transmission Planner
 - “UVLS entities”: Distribution Provider and Transmission Owner
- **NOT** included:
 - Generator Owner and Generator Operator
 - Load-Serving Entity
 - Transmission Operator

- **Proposed new NERC Glossary term:** Automatic UVLS Program
- **Requirement R1:** Coordination with other protection and control systems and generator voltage ride-through capabilities
- **Requirement R5:** Periodic program assessment
- **Requirements R6 and R7:** Program performance analysis; perform design assessment to address identified deficiencies
- **Requirements R8–R10:** Maintaining and sharing program data

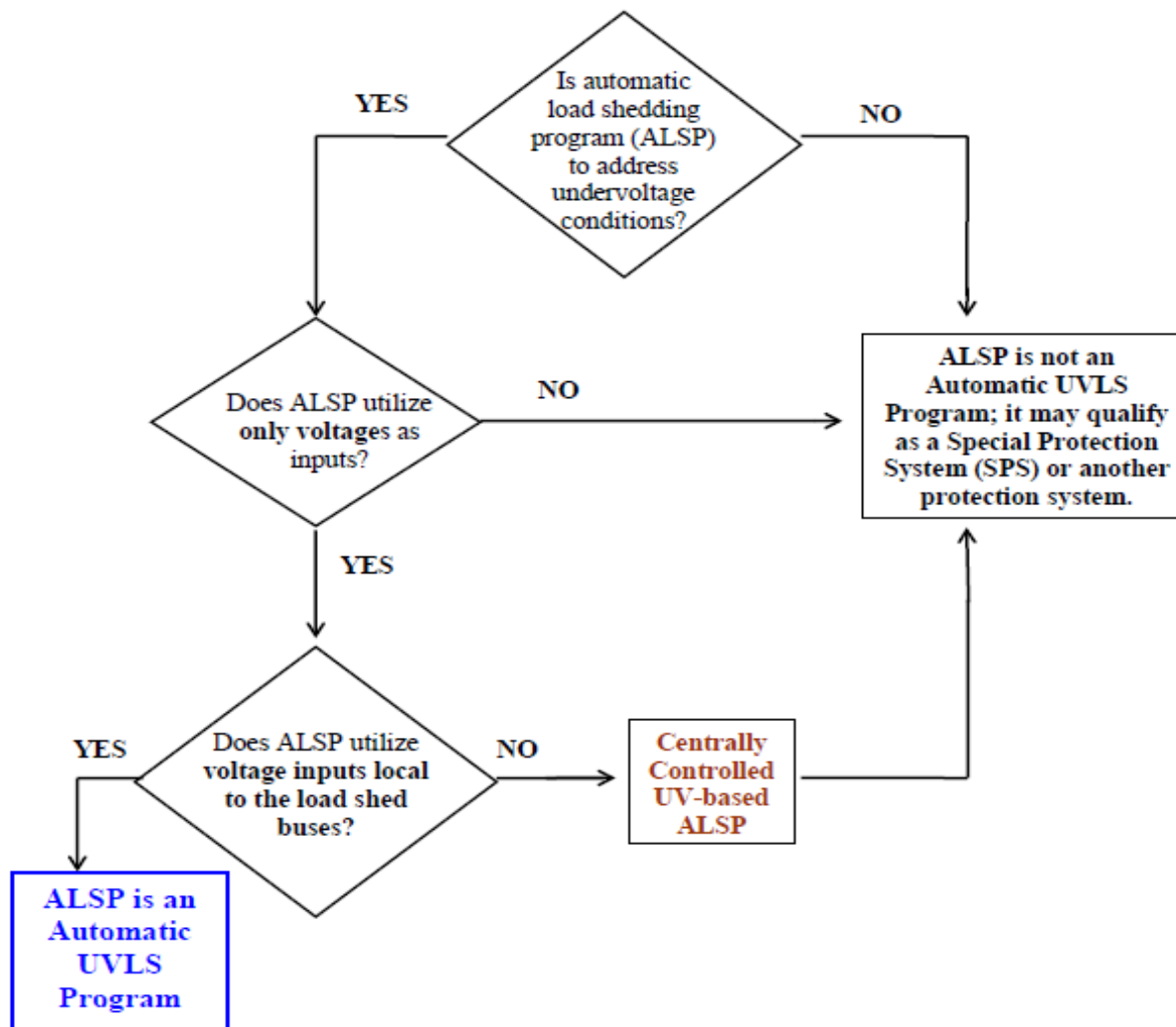


Definition: Automatic UVLS Program

Hari Singh, Xcel Energy

Automatic UVLS Program – A coordinated automatic load shedding program consisting of distributed controls or relays that protects the Bulk-Power System (BPS) from the potential effects of severe undervoltage conditions. The following are excluded:

- Centrally-controlled or centrally-armed UVLS controls or relays
- UVLS controls or relays that are used to address localized undervoltage conditions that would not adversely affect the BPS





R1: Program Coordination

Matthew Tackett, MISO

- Applicable to the Planning Coordinator or Transmission Planner
- Coordination with other applicable protection systems, such as:
 - Transmission line protection and auto-reclosing
 - Special Protection Systems (SPSs)
- Coordination with generator voltage ride-through capabilities
- Coordination with other UVLS programs



R5: Program Assessment

José Conto, ERCOT

- Applicable to the Planning Coordinator or Transmission Planner
- Perform a program assessment every five years (same periodicity as PRC-010-0)
- Assess the continued need, effectiveness, and coordination
- Requirement allows for assessments due to changes in system topology or operating characteristics



R6 and R7: Performance Analysis

Manish Patel, Southern Company

- Applicable to the Planning Coordinator or Transmission Planner
- Analyze the program performance for events that result in voltage excursion below initializing set points
- Analysis will inherently identify relay Misoperations
- Perform a design assessment to address identified program deficiencies
- Time frames after an event:
 - Up to one year to perform performance analysis
 - Up to two years to address identified deficiencies



R8–R10: Program Data

Charles-Eric Langlois, Hydro-Quebec

- Requirements:
 - Planning Coordinator or Transmission Planner update the database at least once per calendar year
 - UVLS entities provide data in the format and schedule specified by the Planning Coordinator or Transmission Planner
 - Planning Coordinator or Transmission Planner provide the database to Planning Coordinators or Transmission Planners within the Interconnection within 30 days of a request
- A program database is necessary to have data available for studies during event analyses and assessments
- Database provides a central repository of relay settings for Transmission Operators (PRC-001, Requirement R1)



Project Moving Forward

Erika Chanzas, NERC Standards Developer

- An [informal comment period](#) on the revised SAR and draft standard is currently open and will end on **October 9**.
- Development and outreach will continue through November.
- The drafting team is coordinating with the Independent Expert and EOP-003-2 Five-Year Reviews.
- Documents are scheduled to be posted for the first formal comment and ballot period in January.
- Submittal to the NERC BOT and subsequent regulatory filing is targeted for Summer 2014.

- Early consensus-building is our top priority.
- We encourage stakeholders to follow our effort, attend outreach events, and provide constructive feedback.
- Please contact Erika Chanzas at Erika.Chanzas@nerc.net with any questions and to be added to the project's email distribution list.
- These slides will be posted on NERC.com. Click on "Standards" and then "Webinars".



Questions and Answers